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together under proper nutrient conditions. The form is therefore heterothallic.

Whether or not it may ever be found that a homothallic race may occur in a species normally heterothallic (perhaps not an impossible condition in view of the writer's having obtained a homothallic mycelium of the heterothallic Phycomyces), the evidence at hand leads one to the conclusion that the large majority of the Mucorineae are heterothallic.—A. F. BLAKESLEE, *Cryptogamic Laboratory, Harvard University.*

TWO EMBRYO-SAC MOTHER CELLS IN *LILIUM LONGIFLORUM*

(WITH ONE FIGURE)

The presence of more than one archesporial cell in the megasporangium of the Spermatophyta has frequently been reported for gymnosperms and dicotyledons, but the records of their occurrence in monocotyledons are very few. In 1882 GUIGNARD[1] figured two small hypodermal cells in *Ornithogalum pyrenaicum*, which he interprets as archesporial. As these cells are but little larger than the other cells of the nucellus, and the character of the protoplasmic content of the adjacent cells is not shown, the evidence here is not altogether conclusive. COULTER and CHAMBERLAIN[2] state that they have observed two preparations of *Lilium philadelphicum* showing respectively three and five archesporial cells, but they neither described nor figured them. BERNARD[3] observed and figured two four-celled embryo sacs

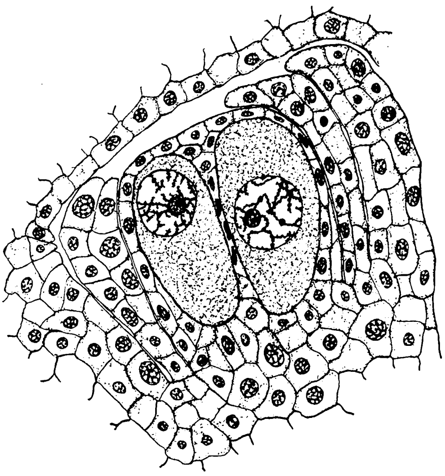

FIG. 1.—Vertical section through a young ovule of *Lilium longiflorum*, showing two embryo-sac mother cells.

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[1] GUIGNARD, L., Recherches sur le sac embryonnaire des Phanérogames Angiospermes. Ann. Sci. Nat. Bot. VI. **13**:136–199. *pls. 3–7.* 1882.

[2] COULTER and CHAMBERLAIN, Morphology of Angiosperms. New York. 1903.

[3] BERNARD, C. H., Recherches sur les sphères attractives chez *Lilium candidum*, etc. Jour. Botanique **14**:178. *pls. 4–5.* 1900.

lying side by side in *Lilium candidum*. They are not separated by a layer of nucellar tissue, and the two are in intimate contact along their inner faces. Because of their position, BERNARD says it is impossible to determine whether they are derived from two archesporial cells or from one that has divided longitudinally. So far as I am aware, these are the only recorded instances of a multicellular archesporium in the monocotyledons.

In examining some slides of *Lilium longiflorum*, recently prepared by Miss ALLEN for general class use, I observed two megaspore mother cells in a single megasporangium. It is impossible in this instance that they should have arisen from the same primordial cell, since they are separated by a layer of somatic cells. As the accompanying figure shows, both are perfectly normal as to position, form, and protoplasmic content; the surrounding portions of the young ovule also present the usual appearances at the time just before the heterotypic division. There is every reason to expect that both of these archesporial cells would have given rise to normal female gametophytes.—MARGARET C. FERGUSON, *Wellesley College*.